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Walther Photo

Graptopetalum pachyphyllum Rose. x 0.9

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THE CACTUS PLEDGE OF THE SAN FERNANDO CACTUS CLUB

To foster and develop public interest in our "XEROPHYTIC FRIENDS."
To conserve the beauty of the desert by being modest in my collecting of native types.
To encourage the growing of cacti as far as practicable from seed.
Watching over our seedlings as a mother would her child, and
Rearing them with tender care.
Keeping them free from all parasites.
Shading them from the burning sun.
Supplying them with soil rich in plant food.
Starving them not, by planting them in sand alone.
Let them die not from thirst.
Be generous with water, but do not overdo.
Provide them with drainage so they will grow.
To look not upon the collection of my brother with envious eye.
To impart knowledge gained thru my own experiences to my brother so his mistakes will be fewer.
To encourage the use of botanical nomenclature.
To study the habits of my plants calling them by their proper names.
Sneering not at others not so well versed in this language as I.
But to aid my brother to gain this knowledge thru my help and experience.
To give my loyal support to my society and its officers.
To work with undivided interest for its benefit.
When appointed on committees to carry out the assignment cheerfully and to the best of my ability.
To make reports faithfully and promptly.
To do no overt act in my dealings with others that will cast any reflection upon the Society or its members.
But thru my efforts to aid in making this Society the one most outstanding in the country.
All this I promise and pledge upon my honor as a member of the "Fantastic Clan," the San Fernando Valley Cactus and Succulent Society, and may my bed be made with the "Glochids of the Opuntiae," my feet be pierced with the armor of the Cholla, and may I be judged before the seats of the mighty while embraced in the arms of the Creeping Devil, if I fail to know my cacti and respect their spines.

By H. C. WHITMORE *and* J. F. HUGHES,
President and Past President,
San Fernando Valley Cactus and Succulent Society.

The constitution and by-laws are being revised, and an announcement will be made in the JOURNAL when they are ready for distribution.

NOTE: The illustration on the cover of the May issue should have read *Nopalxochia phyllanthoides.*

"SUCCULENTS" by van Laren with 145 illustrations in natural colors of succulents other than cacti; written so that everyone may understand. This is the last opportunity to obtain the book at its original price of $3.85. Aug. 1st price advances to $5.00. An ideal gift. Reserve a copy now. **ABBEY SAN ENCINO PRESS**, 6162 North Figueroa St., Los Angeles, Calif.

Euphorbia atropurpurea and *Euphorbia balsamifera*

Leafy Euphorbias from the Canary Islands

By Dr. Oscar Burchard

Besides the two attractive cactus-like Euphorbias—*E. canariensis* L. and *E. handiensis* Burch—occurring on the Canary Islands, there are also a number of leafy species native to the islands which are all beautiful plants worthy of cultivation for their attractiveness in shape, color of leaves, stems and flowers.

The photograph herewith shows two particularly different types. The one shown on the left is *Euphorbia atropurpurea* Brouss, and that on the right, *E. balsamifera* Ait. These two species are easily raised from seed, and do well when grown in pots or any warm location, and make a very showy plant for rock gardens.

This specimen of *E. atropurpurea* is only one year old and measures twelve inches high. It will be seen that the plant has flowered at this early age, showing the first umbel of flowers which has, as the name implies, the pedicles, bracts, and the capsels of a dark purple-red color, which contrasts beautifully with the long oval glaucous appearing leaves, while the stems in the second year become a decided cinnamon color, making a very attractive combination of colors.

E. Balsamifera is perhaps four or five years old, and as will be seen, forms an extraordinarily large stem with silver-green bark. The clear glaucous leaves are short and have a narrow lancet-like form. Peculiar to this species are the yellow flowers which occur singularly in the center of the leaf rosettes, later producing a large orbicular capsule.

Both of these Euphorbias produce a dense ramification after the floration, forming a perfect globular bush in which the rosettes touch each other. After a few years *E. atropurpurea* becomes a plant of great decorative beauty, and is much desired for balustrades and postaments. The habitat is in the higher mountains of the islands, occurring up to an altitude of 900 to 1000 meters, with many days of the year in fog and clouds. The plant also does well in partial shade and resists a low temperature. *E. balsamifera* occurs along the coast and prefers a hot, dry climate.

My Pets -- The Phyllocacti*

By H. M. WEGENER

The great interest in these wonderful plants, recently demonstrated by the public, and the many questions asked in regard to the raising, causes me to comply with a request to explain my "luck" in having a large and healthy collection. However, may I first of all say that I do not desire to be quoted as an authority, nor do I wish to antagonize our scientists or those readers who have succeeded in likewise acquiring a splendid collection through altogether different means.

All of us who have seen a number of different phyllos in bloom must admit that their beauty repays all the trouble and disappointments to be able to have an assortment. To do so is very easy, with care, healthy stock and patience.

Being originally an epiphyte, the plants need rich soil and moisture during growing season. Use leafmold, mountain or other rich soil and well decomposed cow fertilizer. In order to better hold the moisture use some peat. I do not use soil from under oak trees, as I believe it contains too much tannin, nor do I use lime, because epiphytic plants do not have lime in their native soil. If lime is in the soil, the phyllo will try to eject it through the leaves, causing brown spots. A potted plant should have good drainage and be watered sparingly during resting season. Most of us believe the plant is dying because the leaves shrink and wilt, but the plant merely needs a rest. This resting season has discouraged many from raising these wonderful plants. We are somewhat ashamed to let our friends see the "poor" plants. As soon as leaves begin to swell again I help along with either scrapings of poultry farms, fishmeal or decomposed cow fertilizer, placed on top of the soil and worked in gradually with the help of a galvanized spike. I never used commercial fertilizer until I heard of "Pokon," which, if used carefully, seems to do wonders. The reader may laugh, but nevertheless I'll continue to rely upon the help of the man in the moon, i.e., I nourish roots in the dark of the moon, graft and transplant in the light of the old man. The plants, naturally, want semi-shady places.

Experience has taught me that most phyllos do better when grafted. And for this purpose I prefer Opuntias, *Cereus nycticalus* and Hylocereus. For Zygocactus, however, a Pereskia or "Hylo" stock seems to be the best. To use a very thick leaf of Opuntia, cut a hole in top, and then graft. A slender Phyllo is not very pleasing to the eye. A crosscut upon any selenicereus or Hylo makes a grafted plant look more natural. To look upon any grafted plant seems to be agony to the scientist, for one of our best known authorities upon cacti remarked to me, when showing him a rare Epiphyllum with 14 beautiful flowers, "We scientists do not believe in faking."

Graft only when stock and cuttings are in sap. Consider grafting a surgical operation; use absolute cleanliness and you will have 95 per cent success. Do not make cut much longer than insert, use two spines to help join together and have spines protrude both sides to keep the string you tie around from slipping. I do not use wax, because it is a foreign matter and, if entered into the wound, will prevent healing. Nature is the best doctor, and if we could be assured of two cloudy days, no string would be necessary. It is the sun which makes the cut spread rather than close up. Do not cut lengthwise but crosswise. Place a stick against plant, a little longer than graft, tie stock as well as graft, but do not allow stick to touch the spines, attach label with name of plant grafted, place a paper bag in which you have cut two "peep" holes over stick and tie below graft.

Subdue your curiosity for about a week and then see whether the stock has made shoots, which should be removed. In about two weeks the graft will show if it "took" and you may then accustom graft to sun rays. Bagging is not necessary in a hot-house. Once started, you will be surprised to note how fast a graft will grow. Four-inch leaves, taken from newly created hybrids, grafted upon Cereus, have formed leaves measuring nine feet, and having five magnificent flowers. The mother plant is still small with ten leaves of from five to seven inches in length.

It is very discouraging trying to raise Phyllos from seeds, only those of us whose patience lasted can appreciate the results. Some seeds will germinate in two weeks, some only after several months. And when they do start we might blame the seller for having sold us Cereus instead of Phyllo seeds. The new

The name Epiphyllum was first used in 1689 and was established in 1812 by Haworth. Nineteen years later the name Phyllocactus was given and has been generally used. The older name, however, must be used.

arrivals look like *Harrisia horrida,* and are often discarded or neglected without watering. To insure success with Phyllo seeds they must be kept at a fairly even temperature and always moist. I would only advise those with leisure time and patience to raise Phyllos from seeds or those people who have ambitions to raise something extraordinary. I regret to say that it is left to people in Europe, particularly in Germany, to demonstrate the love for creating new Phyllos. They have not only created new varieties in wonderful colors, but also in shape, size of plant, time of flowering, flowers from one-fourth inch to twelve inches in diameter. A Mr. Knebel, whose hobby has been Phyllos for over 40 years, has now created a Chrysanthemum or Dahlia among the Phyllos. Likewise he has had the patience in raising from seeds and has produced a dwarf plant, bearing hundreds of flowers, smaller than Zygos but larger than Rhipsalis. This plant is raised for the benefit of those Phyllo lovers in large cities whose space is limited to window-boxes. We in our country of haste and waste have no time, whereas these men with their patience and perseverance have created well over 500 Phyllos of all colors and shades except black, green and blue, but the latter color has nearly been reached in the delicate purple lustre shading into white. It takes an artist to truly describe the gorgeous coloring of some specimens.

The continual inquiry for "yellow" forces me to state that a real yellow has but lately been created and may only be found among the few collections in our country. The public is greatly misled with the assertion that this or that specimen is yellow, whereas it is cream-colored or yellowish; it may be even a canary yellow, but not sulphur. Another continual request comes for "pink." There are many real pink varieties of various size and growth, but a pink-colored Phyllo, except the so-called "German Empress," is the "enfant terrible" among collections, because somehow they are subject to all the diseases and pests known to collectors. If disease or scale develops it shows up first upon a pink. Even the German Empress, cultivated for years, shows the black spots. It seems that human nature wants things hard to procure, like the yellow and pink, the latter being sold for pink in many cases, whereas the flower is rose-color in various shades. Propagation from cuts is the easiest way. Cuts should be allowed to heal before planting in sandy loam.

Having mentioned diseases and scales, I may say that I found foilage to be most efficient for all purposes, except the dreaded mealybug. Get rid of the ants and half the battle against this pest is won. I also use Volck to advantage. Now, since alcohol is available in palatable (?) drinks, our wives may let us try some upon our plants, although great care should be observed.

It is regrettable that such great confusion exists as to names. Phyllos are about the only species of our cacti that the creators have used good sense in naming, considering that not all of us have gone through college. They have popular names familiar to all who know a little history, art, science, literature, current events or popular persons. In most cases the dealer does not have to pronounce the long Latin or half Greek and Latin names, yet he quotes a number. If a proper name cannot be given, the plant should sell according to colors and leaves. But as the leaves look so much alike, Phyllos should be bought during blossom time, April to end of May, from reliable dealers, making a specialty of Phyllos or from importers.

Here are a few representative Phyllos with exceptional flowers:

Madame de Laet, Livingston, Ed Andree, Luna, Fred Schlumberger, Conway's Giant, Curt Backeberg, Robert Blossfeld, Dr. Werdermann, Walter Haage, Jr., Grand Soleil, Phoenix, Magnolia, Frau Martha Knebel, E. Seyderhelm (12 inch), Cooperi, Alice Roosevelt (no cousin of mine), Deutschland, Mussolini, etc., etc. And last, but not least, the latest—Anna Hitler.

Personally I do not believe in naming any plant, edifice or structure after a living person. Wait until we may truthfully say, Finis coronat opus, or, in plain American, he's gone but not forgotten.

EDITOR'S NOTE: Mr. Wegener is one of the old-timers in raising Phyllocactus, and his modesty keeps him from describing his new creations and his personal aid to such botanists as the late Dr. Rose. His plants speak for themselves, and there is no doubt that Mr. Wegener spends half of his time "lassoing" his plants to higher supports.—S. E. H.

CACTUS CULTURE

This is the most up-to-date, practical and comprehensive book published on the culture of Cacti. The most experienced as well as the beginner will find in this book suggestions which will prove both profitable and interesting. 186 pages 5½x8 with fabrikoid binding. Price $2.00. Cactus Society.

BOUND VOLUMES of the Cactus Journal, Vol. I, II, III, and IV, are now on sale; these will be very valuable before many years, so take advantage of the opportunity at this time. Volume I $9.00, Volume II, III and IV at $6 each.

Several Succulent Euphorbiae of the West Coast of Africa

By DR. LEON CROIZAT

Very trying and often unsatisfactory is the work ahead of plant-lovers and botanists who wish to learn something definite about certain species of *Euphorbia* from Africa.

The work in question is always difficult and is seldom fruitful of accomplishment for the simple reason that the sources of knowledge themselves require further elaboration, if not recasting. Some species have been announced from descriptions, illustrations or sections of stems, not always in good conditions of preservation, contributed by travellers. Boiled down to their essentials, announcements so made yield little over the datum that an *Euphorbia* of such and such habit is to be found at such and such place. Only by visiting the spot of original collection can a botanist establish the facts. Marloth did this, for instance, in the case of *Euphorbia virosa* Willd. He retraced the journey of Lieutenant Paterson in the country of the Hottentots, being able to contribute to botany as the result of his efforts not only a clear understanding of that species, which had remained mysterious for one century and a half, but also the description of a group of species allied to *E. virosa* (see South African Journal of Science, Vol. XXVII, November, 1930, pp. 331-340).

The original description of certain species is inadequate, for which no definite place of collection is recorded, and are known only as plants in the greenhouse. Almost hopeless in the viewpoint of the botanist is the riddle offered by such species when they fail to yield fruits and blossoms in cultivation. Mysterious in this sense are *E. xylophylloides* Brongn., *ex* Lemaire; *E. alcicornis* Baker, of Berger; most forms of the group *Abyssinicae; E. Hermentiana* Lemaire; *E. lactea* Haworth.

E. Hermentiana is possibly the most mysterious of all. We know that it is found on the west coast of Africa; we know that species close to it grow in the regions that stretch from Sierra Leone to Northern Angora; we know that all these species have since an early date been widely distributed and propagated by travellers and natives, the latter using them as totem-trees for purposes of worship and as material for building hedges or for poisoning arrows. *E. Hermentiana* has descriptions without notes as to inflorescence and fruit, these descriptions being made up to last year only from cultivated plants or doubtful dried material. The most recent description of the species, published by Professor A. Chevalier in 1933, deepens the mystery.

The earlier record of the species recites that one live specimen, which seems to have been small, was introduced in France about 1850 by a naval officer, one E. Jardin, who is known to have made some collections in Gabon about 1840. The plant was cultivated in the Botanic Garden of Douai, the caretaker of which, Herment, gave a branchlet to Lemaire. Lemaire in turn published the species as *E. Hermentiana* in honor of Herment. Pax had a vague notion of it, possibly confusing it with other forms; N. E. Brown described it from cultivated specimens, so did Berger, who illustrated it.

When I began to be interested in this species I was impressed by the fact that it was being cultivated all over the world; that large specimens of it, 7 to 8 feet tall and over, grew in forsaken greenhouses, and, particularly, that some specimens of old vintage were being labeled *E. antiquorum.* I was also struck by the fact that Linnaeus published one variety of *E. antiquorum,* mentioned as common before 1750. When Haworth listed it as a distinct species under the name of *E. trigona* (not to be confused with *E. trigona** Roxburgh, announced only two years later, in 1814) all knowledge after 1812 seemed to be lost. Could it be possible that the single importation of Herment was the original stock from which our countless *E. Hermentiana* have been propagated?

So much established, I turned my attention to the records of the importations of succulent *Euphorbiae* with interesting results. Sailors, merchants, noblemen, doctors of medicine and botany were busily importing succulent *Euphorbiae* in The Netherlands during the first half of the seventeenth century. With few exceptions, (e.g., P. Hermann, J. and K. Commelin, F. Kiggelaer, van den Rhede), the Dutch importers and collectors of *Euphorbiae* were interesetd in them as the source of "euphorbium," or the dried sap of the plants, a drug readily purchased by the apothecaries of the time who used it, not always wisely, as a drastic and a cathartic. To the Dutch we owe the earliest

*Illustrated on page 23 in DE EUPHORBIO ANTIQUORUM ATQUE OFFICINARUM by the Author.

cultivation of *E. antiquorum* L., *E. Tirucalli* L., *E. neriifolia* L.

The Dutch ships sailing from Holland to India and the Antilles (where all the species I have mentioned are growing in a half wild state from stock originally imported from India), called at forts and marts established along the west coast of Africa. We also have record of other ships from Holland that visited directly the same coast. Even if we lacked positive documents to this effect, we would be justified in believing that the very same sailors and gentlemen who were interested in the Indian succulent *Euphorbiae* noticed, collected, and at least occasionally brought back to Holland, plants of the same habit that grow on the west coast of Africa.

That this happened at least once, F. Kiggelaer states definitely. In a statement which has so far escaped notice and is very deliberate and precise, Kiggelaer mentions having received from Guinea about 1690 two plants yielding "euphorbium," one like *E. antiquorum* L., and another like *E. neriifolia,* attaining the development of a full sized tree. For the latter plant the record is even more definite and extended than for the former, for we have an illustration of it in color and a note of cultivation from a garden in Holland which, at least fifty years after the original importation, was distributing propagations to interested botanists.

The statement of Kiggelaer points clearly and directly to the importation of forms very much like *E. Hermentiana* Lem. and *Elaeophorbia drupifera* Stapf. Characteristically, and almost coincident with the statement of Kiggelaer appears in cultivation in Holland a mysterious triangular- and quadrangular-winged *Euphorbia,* the very same one that Linnaeus later published as a variety of *E. antiquorum.* As remarked, Linnaeus mentions that this "variety" was commonly cultivated before 1750. Before that time K. Commelin illustrated it, in 1703, and later Haworth published it as distinct under the name *E. trigona* in 1812. In brief: we have a record of some 120 years for this "variety" which after 1812 seems to vanish.

The illustration of K. Commelin shows a plant which is difficult not to accept as a true likeness of a branchlet of *E. Hermentiana,* and when all the elements of the issue are put together, one conclusion is offered to the patient investigator: *E. Hermentiana* is the name that Lemaire gave a reimportation made in 1850, but the plant had been widely cultivated before that time, when it was known as a variety of *E. antiquorum* L., from Linnaeus, and later as *E. trigona* Haworth, from Haworth. Further, the great majority of our *E. Hermentiana* still descend from the old Dutch stock, lost to sight immediately after Kiggelaer. Those of my readers who are familiar with *E. Hermentiana* and *E. antiquorum* (a species which, only recently introduced from Japan into California, was believed to be a new one), will admit that a confusion of the two plants is possible, particularly when they are leafless. Naturally such a confusion was much more probable when the understanding of succulent *Euphorbia* was scanty and superficial, and authors often copied uncritically what the leaders had said in any field of knowledge.

The facts I have just mentioned also account for the circumstance that we know all too well and all too poorly *E. Hermentiana* (in truth, *E. trigona* Haw.). We know it well because it is being widely cultivated, but we know it poorly at the same time because we do not know exactly what it is like in the wild, and we have never taken into account the probable origin of our cultivated specimens.

So much established, we need not be surprised if the stock of our cultivated "E. Hermentiana" may be found to include forms which do not agree well with the type-plants. We may have received from the west coast of Africa some other species like "E. Hermentiana," either through Europe or directly from some of our own American ships trading with the same parts of Africa at the beginning of the last century.

Last year a collector of Los Angeles sent me a cutting of one of these perplexing "E. Hermentiana" with the accompanying statement from good authority that this may be *E. lactea* Roxburgh (not of Haworth, which is the only one we all know). On general and specific grounds I felt inclined to believe that the form in question had nothing whatever to do with Indian plants, and considered it as a type from tropical Africa to be located in the vicinity of *E. trigona* Haw. (*E. Hermentiana* Lem.).

Recently, Professor A. Chevalier published in the "Revue de Botanique Appliquée et d'Agriculture Tropicale" (No. 144, 1933), a study on the succulent *Euphorbiae* of the west coast of Africa. In this study Chevalier does not perfectly define *E. Hermentiana* Lem., which is left as an obscure species, and mentions other *Euphorbiae* of the same habit, *E. kamerunica* Pax, *E. Barteri* N. E. Br., *E. Garuana* N. E. Br., inclining to the opinion that the last three named are in reality one species.

The knowledge we possess of all these spe-

cies, with the exception of the type-form, *E. kamerunica,* is fragmentary, as they have been described from branchlets none over one foot long. As a matter of opinion, subject to revision on satisfactory evidence, however, I believe that *E. Barteri* and *E. Garuana* may be one species, but in all cases are most distinct from *E. kamerunica,* which presents peculiar characters of the inflorescence that set it apart. I also incline to the opinion that the puzzling "E. Hermentiana" of the Los Angeles collector may prove to be *E. Barteri. E. Barteri* from its published description is two-angled and not indented, with rather short spines, and it is noteworthy that the short propagation I have received from Los Angeles also has offsets which are two-angled, with indentations to the wings which are less deep than those of "E. Hermentiana."

Taking into account the probability that *E. Barteri's* description must be integrated with that of *E. Garuana* (all these species are from western Africa as noted), which is announced as carrying four wings, reckoning with the circumstance that the dried short branchlets from which *E. Berteri* and *E. Garuana* were described, give a very imperfect picture of the live plants. I believe that we may not be far remote from the truth in accepting the puzzling "Hermentiana" of Los Angeles as a plant from western Africa, and most likely as *E. Barteri* itself.

Those of my readers who like to have decisions will appreciate the fact that the study of Chevalier, who has widely travelled in Africa, seeing the plant at the places where they grow, leaves much to be ascertained. All doubts could be cleared in short order during a visit to the locality. How many of my readers also realize that Mexico (which is so much nearer to us) numbers a great many interesting *Euphorbiae* not less "mysterious" than those of Africa?

BOOK REVIEW

"De Euphorbio Antiquorum Atique Officinarum" by Leon Croizat. Price $1.00 from I. B. Levi, 6 Fenimore Road, Scarsdale, N. Y. A study of Succulent *Euphorbiae* long known in cultivation. In English, with original Latin diagnoses. 126 pages, 7 illustrations, paper cover; a large bibliography.

Dr. Croizat begins with earliest records to trace the history of our first known Euphorbias through all their varied namings, and offers in logical manner deductions that will clear up the correct naming of many plants in our gardens.

The book is of technical interest, but will be appreciated by all lovers of the Euphorbiae. It ends with a summary of corrections in names that all who have Euphorbias should make. Lack of an index is inconvenient. The book is recommended.

PRESIDENT'S COLUMN

By CHARLES GIBBS ADAMS, *President*

A Princely Gift

Now comes a regal gift to all who love the stately and the beautiful, the picturesque and the fantastic, in plant life.

One of the world's few truly great outdoor collections of Cacti and other Succulents will now belong to all the people for all time; a collection that represents many years of gathering from the deserts and jungles of the ends of the earth, many years of cherishing and study, and many, many thousands of dollars.

The collection has been a life work of that master plantswoman, the late Mrs. D. J. Bullard of Los Angeles (famous, signally, as the originator of the colored Watsonias that have meant so much to modern gardens). Her Cactus collection now becomes the gift of her son, John Bullard, to be transplanted to the Parkway of Beverly Hills as a living, growing monument to her memory.

It has been the happy privilege of the president of the Cactus and Succulent Society of America to donate his services in the negotiations.

A notable unit of the collection consists of many rare Euphorbias from Africa, who so skillfully impersonate the Cacti; another, many noble Cerei from South America, both day blooming and night-workers with phosphorescent blossoms; another, Yuccas that tower as trees thirty feet into the air, and Agaves with blue and yellow leaves seven feet in length; another, rare man-made hybrids from the hothouses of Belgium, whose precious parent plants were destroyed in the world war.

Situated directly on Santa Monica Boulevard, midway between Hollywood and the sea, on the most frequented route from Pasadena, Filmdom and northerly Los Angeles to the beaches, the new garden will be more easily accessible to the public than any other famous collection. Automatically it will, even without stop signals, flash into the view of the thousands of residents and tourists who daily drive that way.

How much better so bestowed than hidden behind locked gates!

The following 8 pages are from Vol. I. THE CACTACEAE.

Brachycereus and Jasminocereus

Editor, Cactus and Succulent Journal.

In the interest of accuracy of articles published in the JOURNAL and in defense of those master botanists, Messrs. Britton and Rose, I most respectfully call your attention to certain errors that appear to me to have been made by John Thomas Howell in the two articles, "Cacti in the Galapagos Islands," in the February and March issues of this CACTUS JOURNAL.

On page 516 of the February issue Mr. Howell says: "Adding much to the impressiveness of this cactus forest is the giant Cereus, *C. Thouarsii* Weber, etc."

On page 531 of the March issue, first column, second paragraph, Mr. Howell says: "Already *Cereus Thouarsii* Weber has been described as it occurs in its most magnificent form in the cactus forests at Academy Bay on Indefatigable Island. The tall, slender trees found there are in marked contrast to the lower, queerly jointed type found on the lava pavements of southwestern Albemarle Island or on the sterile lava flows of recent origin. In the taller type, the joints are more elongated and oblong, but in the shorter type, the joints are thicker in proportion to their length and are elliptical. It is this shorter type with its peculiar swollen joints that adds so much to the remarkable assemblage of plants bordering on the lagoons on the west side of Albemarle Island.

"Like *C. Thouarsii, C. nesioticus* K. Sch. is also one of the very first plants to grow on fresh lava flows in the Galapagos Islands, but unlike the former species, *C. nesioticus* is never found anywhere except amid the sterile waste of its chosen home. It seems utterly intolerant of the company of shade producing plants or the conditions which allow such plants to grow. This hermit among Galapagan cacti is one of the most attractive species in the islands, a low plant about one to one and a half feet tall, composed of a clump of cylindrical stems that are densely covered with short golden or tawny spines."

From the above quotations it will at once appear that Mr. Howell can not be familiar with the description of *Brachycereus Thouarsii* (Weber) on page 120 of volume II of THE CACTACEAE, nor of *Jasminocereus galapagensis* (Weber) on page 146 of the same volume.

To clarify the issue permit me to quote that portion of the above mentioned descriptions that applies to the plants, omitting the flower descriptions as being irrelevant to this matter.

"BRACHYCEREUS THOUARSII (Weber)

Cereus Thouarsii Weber, Bull. Mus. Hist. Nat. Paris 5:312. 1899.

Cereus nesioticus Schumann in Robinson, Proc. Amer. Acad. 38:179. 1902.

Stems 6 to 10 dm. high; branches numerous, radiating and ascending, 3 to 5 cm. in diameter, entirely covered by a mass of yellow spines; ribs about 20, low, 3 mm. high; areoles 5 to 6 mm. apart; spines about 40, unequal, the longest ones about 3 cm. long, bristle like."

"JASMINOCEREUS GALAPAGENSIS (Weber)

Cereus galapagensis Weber, Bull. Mus. Hist Nat. Paris 5:312. 1899.

Cereus sclerocarpus Schumann in Robinson, Proc. Amer. Acad. 38:179. 1902.

Tall, often 8 meters high or more; trunk large, cylindric, 15 to 30 cm. in diameter; branches spreading, very stout, composed of many short joints, about 14 cm. in diameter; ribs 15 to 18, low, about 1 cm. high, separated by broad rounded intervals, etc."

From the above it will be seen that *C. thouarsii* and *C. nesioticus* are the same plant and are the identical plant that Mr. Howell refers to in his article as *C. nesioticus,* while the large plant that Mr. Howell calls *C. Thouarsii* is in fact *J. galapagensis.*

If Mr. Howell has read the above descriptions and has reason to disagree with them, should not he have stated this in his article? On the other hand, if Mr. Howell has not familiarized himself with Britton and Rose's publication of these two monotypic genera, why did he refer them back to Cereus as he states he has done?

I have discussed these questions with a number of fellow students of cacti and we have all agreed that we will be deeply interested in Mr. Howell's explanation, if he will be kind enough to make one.

W. TAYLOR MARSHALL.

Concerning the Names of the Species of Cereus in the Galapagos Islands

JOHN THOMAS HOWELL

Assistant Curator of Botany, California Academy of Sciences

The points which Mr. Marshall raises were discussed in my paper on "The Cactaceae of the Galapagos Islands" in the Proceedings of the California Academy of Sciences about a year ago (ser. 4, 21:52, 53—1933). Reasons were briefly given there for not following Britton and Rose in their account of the two species of the *Cereus*-relationship found on the Galapagos Islands.

As I worked over my collection of *Cactaceae* from the Galapagos Islands, I reviewed as far

as I was able all the plant material and published evidence on which the species were based. When I came to the two species of *Cereus*, I wrote to the Museum d'Histoire Naturelle in Paris, where M. Weber worked, to learn if any Galapagian material was preserved which might be studied; but I received the reply that none could be found and that it was likely that none was saved by Weber to serve as types or authentic representations of the plants he described. I concluded that Weber's reference to Du Petit Thouars' record of the plant named *Cereus Thouarsii* was probably taken from that admiral's journal published in 1841 (Voyage autour du monde sur la fregate La Venus . . .) and the description of the fruit given by Weber was probably also taken from the journal. The fruit described is that of the arborescent *Cereus*. At this point I had just enough information to be doubtful as to what *C. Thouarsii* might really be. The description of the habit indicated a low-growing plant, the description of the fruit indicated the arborescent species.

With no help from the herbarium in Paris, I turned to the other specimen mentioned by Weber when he first described *C. Thouarsii*. The collection referred to was obtained by Dr. Louis Agassiz on the Hassler Expedition and was sent to Dr. George Engelmann at St. Louis, one of the world's foremost students of cacti. Whether Weber ever saw the specimen or whether his reference to it is merely based on communications received from Engelmann is not clear, but there is no doubt about what specimen is meant when it is mentioned under *C. Thouarsii*. The Agassiz specimen was not available to me for study, but two excellent photographs of the plant were loaned from the Herbarium of the Missouri Botanical Garden by Dr. J. M. Greenman. In the absence of other material studied by Weber, I hold that these photographs must serve as a basis for the identity of *C. Thouarsii*. Britton and Rose also used these same photographs in determining historically what plant Weber was describing (Britton and Rose, Cactaceae 2: 121) but the disagreement comes in interpreting the photographs. When Britton and Rose examined the photographs, they believed the low cylindrical stem pictured represented the low-growing species; but when I studied the photographs, I recognized the plant as a *young plant* of the arborescent Cereus.

The photographs of the Agassiz specimen show a relatively low cylindrical stem, clothed with stiff, somewhat divaricate spines which are not so dense but that the ribs are easily discernible between them. It is evident that there are only seven rows of spines visible on the half of the stem exposed to view, or, at most, fourteen rows of spines in the whole circumference. Now, in the arborescent *Cereus*, the stem has generally thirteen to sixteen ribs, rarely as few as twelve or as many as eighteen; but, in the low-growing species, the stem has generally twenty or twenty-one ribs, rarely seventeen or twenty-two. Moreover, in the latter, the golden or tawny spines are so dense on the cylinders that the ribs can never be seen in a superficial view, the number of ribs being ascertained from cross-sections of the stem. As luck would have it, I collected a good specimen of a seedling of the arborescent *Cereus* on the islands, and there is an excellent photograph of a seedling of the same species taken by Mr. Toshio Asaeda, photographer to the Templeton Crocker Expedition. These were of assistance in checking and confirming my count of ribs as well as presenting seedling material for direct comparison.

So it was concluded that the plant named by Weber as *Cereus Thouarsii* was the arborescent *Cereus* of the Galapagos Islands. The plant he names just below it on the same page, *C. galapagensis*, he describes as arborescent. But in botany we must use for a plant the first name given to it if the name can be placed with assurance. Professor Karl Schumann did not believe that either of Weber's species was described so that they could be placed, so in 1902 he renamed the arborescent *Cereus*, *C. sclerocarpus*; and in naming the low-growing Cereus, gave it its first name, *C. nesioticus*. In the case of the present writer, it has been possible to interpret the older and rather meager specimens and descriptions in a way which would not be possible except through a perfect intimacy bred in the field.

In my account in the Academy Proceedings, I also gave the reason for treating these plants as *Cereus*, as follows: "It seems evident that the two *Cereus*-like plants of the Galapagos Islands are representative of two distinct generic types, but without a wide and intensive study of the numerous genera segregated from *Cereus*, it is not possible here to confirm *Jasminocereus* and *Brachycereus*, the two monotypic and endemic genera proposed by Britton and Rose for the Galapagian species. Since just now there is not time for as detailed a study as the situation requires, the plants are again referred to the old and broadly conceived genus *Cereus* with the specific names believed to be correct."

Photograph by A. B. Clayton

Opuntia prolifera atop the barren Coronado Islands off San Diego's coast. This is an unusual photograph of a specimen typical of those found on the islands. Mainland plants are less irregular.

California Cacti

XII. OPUNTIA PROLIFERA

By E. M. BAXTER

Opuntia prolifera, California's coastal cholla, is very common in its range, and yet has been seriously neglected in literature. If seen in its native habitat, there can be no question about its identity because it is the only cholla growing on the islands or along the coast that assumes upright form; and is the only cholla in all of its range except that small part of San Diego County along the Mexican border where *Opuntia serpentina* also is occasionally found.

In Volume IV, Page 256, of this JOURNAL, Ralph Hoffman gives the following information on the northern distribution of the species:

"A colony of flourishing plants is found on a rocky slope directly over the ocean beach about a mile north of Ventura . . . The species is frequent along the extreme summit of the westernmost section of Anacapa Island, directly over the ocean. A small colony is found on the southeast end of Santa Rosa Island, near the sea. On Anacapa Island this cactus is often covered with such a dense growth of lichen that the host plant is concealed."

The hills along the coast at San Pedro, Newport Bay, and southwards quite commonly have large colonies of this Opuntia on their slopes. "Colonies" is generally used to describe the stands of this opuntia, and quite properly. Young joints are very readily detached and fall to the ground to strike root and form new plants. So too do the few to a dozen fruits in a proliferous bunch when that bunch is dislodged and falls, breaking into as many parts as there are fruits.

Plants grow upright, generally with a single trunk, and are branched at the top. They may grow to as high as six feet. Joints are nearly always extended with the juice they contain, in which case the tubercles are only slightly marked. The plants may dry out in drought seasons and then show the nature of the tubercles. They are longer than broad and flattened along the sides. The areole is placed at the upper end and bears four or more spines and

numerous long glochids. Fruits are borne around the upper end of young joints, and in a season's growth will give rise to several more fruit from its areoles. These proliferous fruit will, late in the season or a year later, bear added fruits until there may be a dozen or more in the bunch. Some of the fruit may send out branches instead of further fruits, and the branches will grow until heavy enough to break off in a wind, or from some other force, when they will drop and soon strike root to form new plants.

The fruits are not tuberculate, the tubercles being only distinguished by a dark green outline. They have spines when young but soon lose them. Glochids also wear off soon so that the fruit might be used for stock feed—except that stock are not ranged in the territory of this species. I have never seen the fruit ripen—either they dry out and fall or form the proliferous bunches so characteristic.

Flowers are a light rose red to purple, the "red" of the descriptions is not really descriptive of the color. The petals are small. While the color is brilliant the flowers are so small that they are not noticeable and it is probable that few persons have ever seen the flowers.

Britton & Rose mention a small bluish-jointed form growing near Newport Beach, Orange County. I have collected specimens from this place, growing near the road about a mile from the ocean in the inner bay. The plants seem to be just a form of the regular species, growing in a sheltered and rather moist situation. The plants are noticeably shorter, but the joints are much thicker than those of plants growing in the open along the coast. I do not think there is any specific difference in the Newport Beach specimens.

There are specimens, though, that probably do rate some recognition. Referable in most ways to this species, there are differences in distribution, color of spines, and probably other characters, that mark it as distinct—in a form that grows in the valley leading from Elsinore into inner San Diego County. The fact that it is separated from the coast by a range of high hills is the really distinguishing feature. Its spines are yellow, and encased in yellow sheaths—markedly different from the red spines of the coastal form. Plants are more slender, the tubercles more prominent, than typical plants. I have not been able to collect flowers or fruit and doubt that the plants are so free flowering and fruiting in this valley.

This species is closely related to the species of the Imbricatae Series, although placed in the Fulgidae Series. *Opuntia molesta* of the former series is little different from the heavier-jointed specimens of *Opuntia prolifera* of the *Imbricatae*. A specimen of *Opuntia molesta* that I collected on Santa Margarita Island, off southern Baja California, is not appreciably different from local specimens of *Opuntia prolifera*. It may be that they should be considered as the same species which would extend the range of the species several hundred miles southwards. The Baja Californian plants do not exhibit the proliferation of fruit.

Bax Photo

Proliferous fruits of Opuntia prolifera. This joint and fruit is from Newport Bay and is the "small" form mentioned in "The Cactaceae." The split, to be seen at the left side, in the joint is common in this locality, and seems to be the result of excess moisture late in the growing season.

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A. D. Houghton

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Price $2.25 Postpaid

Cactus & Succulent Society of America

San Fernando Society's Second Annual Show

By H. C. WHITMORE

The Mordigan Nursery's large lathhouse proved to be a perfect setting for the various schemes carried out by the many exhibitors, and the local Society is grateful to the Mordigan boys who kindly offered us the use of the nursery and worked ceaselessly with our show manager, Mr. J. F. Hughes, to make the show a success.

The show was considerably larger than last year, covering seven thousand square feet of space with the standard greatly aggrandized. The outstanding features of the show were the large amount of space available whereby the exhibitor could set his plants far enough apart to show their beauty, and the large aisles which enabled the patrons to view the exhibits without crowding. The rarity of the plants shown had the judges so baffled that no decisions were reached by them for the rarest cactus and the rarest succulent. The usual jovial spirit prevailed at the show. It was surprising how fast the plants came into bloom; the eight-foot Carnegia gigantea exhibited by the Veterans' Hospital burst forth with a gorgeous red flower, and Mr. Benedict was amazed to see his recently imported Neomammillaria Hamilton Hoytae in bloom; however, after he had examined it, the joke was on him, and the laughter that followed reverberated throughout the lathhouse.

It would be impossible to describe every entry made as we would like to do, however, each exhibitor has received his or her award, and the following are some of the highlights of the show, the intention being not to slight anyone:

Dr. A. D. Houghton captured the sweepstakes with a beautiful horseshoe-shaped landscape in which were exhibited many rare cacti and succulents, including: *Trichocaulin keetmenshoopense cristata, Cephalocereus brasiliensis, Lemaireocereus godingianus, Cephalocereus gaumeri, Lemaireocereus aragonii, Mediocactus hassleri, Monvillea aurivillus, Espostoa albicans, Acanthocereus guatemalensis, Euphorbia reinhardtii, Euphorbia cooperi, Haworthia truncata.* Dr. Houghton also took the ribbon for the best collection of cacti and succulents in the open division.

No show would be complete without the landscape display of the native cacti made by the U. S. Veterans' Hospital. With two large *Carnegia gigantea*—one ten feet and the other eight—and a fourteen-foot Ocotillo, they had a perfect setting for the many other cacti put here and there as if Nature herself had done it. This display won them a silver trophy presented by President H. C. Whitmore for the best landscape over six square feet.

Carl Brassfield brought his interesting collection of Cerei which was very attractively displayed. Mr. Brassfield was repaid by winning the silver trophy presented by the parent society.

Mr. Schick, of the Schick Nursery, Glendale, was again with us; a smiling face we would surely miss. His unusual plants and their neatness won for him the Dr. A. D. Houghton silver trophy for the best commercial table display and a ribbon for the best collection of succulents.

Mr. Robey, of the Rim Rock Gardens, made a very attractive table display of Euphorbias and Haworthias packed in moss and outlined with cholla skeletons; and did his *Neomammillaria mendeliana* and *Malocarpus sub-mamulosus* seedlings last long! Ask him. He was a favorite with the younger generation, and sad, but true, they pulled a trick and proved wiser than he.

We were very much pleased to have with us this year Mrs. M. H. Steele, of the Steele Cactus Gardens, with her attractive display of cactus and succulent bowls in the form of colored porcelain elephants. Surely a home is not complete without one.

The Saxton and McDonald Nursery, San Fernando, chose a varient display of succulents and cactus seedlings. Their exhibit contained well grown Crassulas, Echeverias, and the largest collection of Mesembryanthemums in the show.

Mr. R. W. Kelly made a very nice display of cactus seedlings, showing what can be done with seed which he sells. His collection of cristates made a fine background.

Mr. John Olmsted, of the Live Oak Manor Cactus Gardens, Newhall, showed his collection of curious shaped rocks cut out by Mother Nature, fossil shells, and a fine group of Euphorbias.

If you lost your wife at the show, you were sure to find her at the booth of the Wilshire Rock Gardens. Mr. Kado's Epiphyllums did themselves proud and certainly gave color to the show and attracted the attention of all.

We were fortunate in having Mr. Chas. Morris of the Desert Trading Company, Van Nuys, who has just returned from a collecting trip in Texas. Mr. Morris displayed fine specimens of *Coryphantha sulcata, Ferocactus hamatacanthus, Hamatocactus setispinus, Ancistrocactus scheeri* and a number of others, many of which were in bloom. The large clusters of *Echinocereus loweryii* and *triglochidiatus* drew many comments. He also displayed gila monsters and desert turtles; the former, we were told, laid the eggs which were in the cage, but upon investigation we found them to be chicken eggs, which seem to be much relished by them.

Mr. Wright Pierce again showed his beautiful cactus seedlings which we would all like to own. Why should one want scarred collected plants when such perfect specimens can be grown? These won him first place in the open division.

Mr. F. L. McDonald, of the Corkery and Lynch Cactus Gardens, North Hollywood, arranged a nice display of cacti and succulents.

The amateur division contained some of the rarest cactus and succulents in the show, and made the professionals sit up and take notice.

H. C. Whitmore captured first place for the best collection of cactus. Here were shown for the first time collected plants of *Neomammillaria vaupelii* Tiegel, and *N. mendeliana* Bravo; also several new Echinofossulocactus, among which were the following species: *bravoae, carneus, grisacanthus, parksianus, rectospinus, robustus, rosasianus,* and *sphacilatus,* taking a first for the collection. Mr. Whitmore received first place for his collection of Astrophytums, Malococarpus, and best Euphorbia. His cristates received first in the open division.

Mr. Fred Benedict made a very interesting arrangement of Euphorbias and cacti, winning first place for the best collection of Euphorbias and a first for his beautifully grown *Cephalocereus palmeri.* His collected plants of *Neomammillaria mendeliana* and *N. hamilton-hoytae* and *Strombocactus disiformis* cristata attracted many. The envy of all was his fine collection of Echinofossulocactus, which won him first place in the open division and contained the following species: *albatus, heteracanthus, phyllacanthus, ochoterenaus, crispatus, pentacanthus, bravoae, hastatus,*

gladiatus, coptonogonus, gasseri, sphacelatus, triculpidatus, vaupelianus, griseacanthus, anfractuosus, rosasianus, lloydti, lammellosus, obvallatus, robustus, rectospinus, parksianus, multicostatus, zacatecasensis, arrigens, carneus, esperanzaensis.

A rack containing over a hundred cactus seedlings, neatly arranged, won for Mr. Richard Williams first place.

Mrs. M. Suppe, of Van Nuys, was awarded a first for her beautiful and rare collection of Aloes.

Mrs. H. C. Whitmore won a first for her pair of glazed strawberry jars planted with succulents only.

A beautifully arranged miniature landscape under six square feet, exhibited by Mrs. W. Martin of San Fernando, won first place and a silver trophy.

Considerable rivalry was shown in the Junior divisions for the many plant prizes offered.

Ralph Merrill, Pacoima, won first for the best collection of ten cacti, and Winston Walker, San Fernando, first for the best collection of ten succulents. Worthen Graber, San Fernando, first for his miniature garden under six square feet. Robley Hughes had the best individual cactus.

Mr. and Mrs. Weston kindly came over and took charge of the subscription and book booth. They reported several new members and a number of prospects.

The San Fernando Society wishes to express its thanks to each member of the mother Society who helped to make the show a success.

What Grows Where

Cacti Listed in Accordance With Their Geographical Origin

Compiled and Copyrighted for Mrs. John D. Wright, Santa Barbara, Calif., 1933

By ANNE SMITH

NEW YORK

OPUNTIEAE TRIBE

OPUNTIA

SUBGENUS PLATYOPUNTIA

Tortispinae Series

O. opuntia

Type Locality: In Virginia.

Distribution: Sandy and rocky places from Massachusetts to Virginia, the mountains of Georgia and central Alabama extending north into southern Ontario, Canada (Point Pelee), west in isolated colonies to northern Illinois, eastern Missouri and Tennessee, and long established in the mountains of northern Italy and Switzerland.

NORTH CAROLINA

OPUNTIEAE TRIBE

OPUNTIA

SUBGENUS PLATYOPUNTIA

Tortispinae Series

O. pollardii

Type Locality: Biloxi, Harrison County, Mississippi.

Distribution: Coastal plain, Church Island, North Carolina, to northern Florida, Alamaba, and Mississippi.

NORTH DAKOTA

OPUNTIEAE TRIBE

OPUNTIA

SUBGENUS 3. PLATYOPUNTIA

Polyacanthae Series

O. polyacantha

Type Locality: Arid situations on the plains of the Missouri.

Distribution: North Dakota to Nebraska, Texas, and Arizona to Utah, Washington, and Alberta, Canada.

CEREEAE

SUBTRIBE 6. CORYPHANTHANAE

Neobesseya

N. missouriensis

Type Locality: On the high hills of the Missouri, probably to the mountains.

Distribution: North Dakota to Montana, Colorado to Kansas, Oklahoma, and perhaps northern Texas.

OKLAHOMA

OPUNTIEAE TRIBE

OPUNTIA

SUBGENUS PLATYOPUNTIA

Polyacanthae Series

O. trichophora

Type Locality: Mountains near Albuquerque, New Mexico.
Distribution: New Mexico, Texas, and Oklahoma.

CEREEAE TRIBE
SUBTRIBE 3. ECHINOCEREANAE

Echinocereus

E. baileyi
Type Locality: Wichita Mountains, Oklahoma.
Distribution: Mountains of Oklahoma.

SUBTRIBE 6. CORYPHANTHANAE

Neobesseya

N. missouriensis
Type Locality: On the high hills of Missouri, probably to the mountains.
Distribution: North Dakota to Montana, Colorado to Kansas, Oklahoma, and perhaps northern Texas.

OREGON
OPUNTIEAE TRIBE
OPUNTIA
SUBGENUS PLATYOPUNTIA

Polyacanthae Series

O. fragilis
Type Locality: "From the Mandans to the mountains, in sterile but moist situations."
Distribution: Wisconsin to central Kansas and northwestern Texas, westward to Arizona, Oregon, Washington, and British Columbia.

Cactus Journal Completes Its Fifth Year

This issue of the Journal marks the fifth year of publication. The Society may well be proud that not a single issue has failed to appear; now that this magazine has survived the depressions we may look for greater accomplishments this coming year. The picture above shows the original group that visioned this magazine five years ago. Left to right: G. A. Frick, Mary Norwood Lawrence, Col. Perrie Kewen, R. E. Willis, Lee Chambers, John R. Vosberg, Scott E. Haselton and Dr. Arthur D. Houghton. This group met at Abbey San Encino as guests of the Editor on this anniversary.

ILLUSTRATIONS IN THE CRASSULACEAE

By ERIC WALTHER

No. 7. *Graphopetalum pachyphyllum* Rose

Apologies may be in order for again reverting to the genus *Graptopetalum* so soon, but we are by no means merely riding a pet hobby-horse. The genus is most interesting, largely on account of the potential phylogenetic implications following from its closer study. We now entertain little doubt that both *Pachyphytum* and *Echeveria* have been derived from an ancestral form closely resembling our present-day *Grapropetalum*. Especially true is this of the species here illustrated, which on first arrival was thought to be a variant of the well-known *Echeveria amoena* L. de Smet. These imports were obtained from the San Luis Potosi firm of Romeo and Posselt, now in other hands, without detailed information of their source. Cadereyta is the type-locality of the species, whose range may well extend over a wider area. When received, the plants still retained some of the growing-medium they inhabited in nature, and curiously enough for a succulent, this was a thick layer of sphagnum. The cultural hint was followed, and soon several of the plants produced flower-buds, definitely settling all questions of generic identity. The species was originally described and illustrated in "Addisonia," but Miss Eaton's figure shows a rather poor specimen. When well-grown the terete, club-shaped leaves form dense cushions of a remarkable deep wine-color, covored with a delicate glaucous bloom. The corolla is rather pale, and greatly resembles that of *G. weinbergii* (Rose) E. Walther. On our recent visit to the National Herbarium at Washington we found that at one time Dr. Rose contemplated erection of this into another genus, i.e., *Aldasorea*, commemorating another one of his Mexican friends. Fortunately this never got beyond the manuscript stage and clearly represents a "nomen nudum." However, we have seen it listed in at least one European catalog, and hence mention it here in order to perhaps save someone the expenditure of both time, energy and money involved in its introduction.

"THE STUDY OF CACTI"
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EDGAR BAXTER
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LEMAIREOCEREUS QUERETAROENSIS — Mature plants 4 to 6" diameter, 1 ft. $3.00; 2 ft. $6.50; 3 ft. 10.00. L. griseus, 3 to 4" diameter, same price, f.o.b. here. **Rio Grande Valley Cactus Garden**, J. R. Pirtle & Sons, Edinburg, Texas.

NOTE: Next issue of this Journal will contain information regarding the Index to Vol. V and binding your Journals. Also some interesting plans for the sixth year.—EDITOR.

SPECIAL THIS MONTH—$1 POSTPAID
4 good Mexican Agaves, **perplexans, victoria regina, decipens, ferox.** KNICKERBOCKER NURSERY, Rt. 1, San Diego, Calif. Also 20 beautifully colored postcards with desert scenes and cactus, 25c postpaid.

RELEASED CACTUS PLANTS. Echinocereus sciurus, resembles a Mammillaria, beautiful large pink flower, Neomammillaria Blossfeldiana $1.00 each by mail. Grafted $1.50. HOWARD GATES' FAMOUS CACTUS GARDENS, 117 S. Illinois St., Anaheim, Calif.

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IN MEMORIAM

Dr. Nathaniel Lord Britton died in New York June 25th at 74 years of age. Biologist, author, educator and for 33 years prior to 1929 Director in Chief of N. Y. Botanical Garden. Dr. Britton was a life member of the Cactus Society of America and a loyal contributor to the Cactus Journal. The reprint of Vol. I of his Cactaceae will be our small tribute to his valued work.

CHICAGO INVITES YOU TO ATTEND THE HORTICULTURAL EXHIBITS AT THE CENTURY OF PROGRESS EXPOSITION DURING SUMMER 1934.